



# PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT PCT (PCT Article 36 and Rule 70)

REC'D 10 JUN 2004

Applicant's or agent's file reference <b>IN/PA-98</b>	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. <b>PCT/B 02/01205</b>	International filing date (day/month/year) <b>25.03.2002</b>	Priority date (day/month/year) <b>25.03.2002</b>
International Patent Classification (IPC) or both national classification and IPC <b>C11B9/02, C11B9/02</b>		
Applicant <b>COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH</b>		
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of 2 sheets.</p>		
<p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <li>I <input checked="" type="checkbox"/> Basis of the opinion</li> <li>II <input type="checkbox"/> Priority</li> <li>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</li> <li>IV <input type="checkbox"/> Lack of unity of invention</li> <li>V <input checked="" type="checkbox"/> Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</li> <li>VI <input type="checkbox"/> Certain documents cited</li> <li>VII <input type="checkbox"/> Certain defects in the international application</li> <li>VIII <input type="checkbox"/> Certain observations on the international application</li> </ul>		
Date of submission of the demand  <b>14.10.2003</b>	Date of completion of this report  <b>09.06.2004</b>	
Name and mailing address of the International preliminary examining authority:   <b>European Patent Office</b> <b>D-80298 Munich</b> <b>Tel. +49 89 2399 - 0 Tx: 523656 epmu d</b> <b>Fax: +49 89 2399 - 4465</b>	Authorized Officer  <b>Couzy, F</b>  Telephone No. +49 89 2399-7503 <div style="text-align: right;">  </div>	

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. **PCT/IB 02/01205**

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, Pages**

1-5 as originally filed

**Claims, Numbers**

1-11 filed with telefax on 27.05.2004

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).  
☐ the language of publication of the international application (under Rule 48.3(b)).  
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority in written form.  
☐ furnished subsequently to this Authority in computer readable form.  
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.  
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:  
☐ the claims, Nos.:  
☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. **PCT/B 02/01205**

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**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes: Claims	1-11
	No: Claims	
Inventive step (IS)	Yes: Claims	6-7
	No: Claims	1-5,8-11
Industrial applicability (IA)	Yes: Claims	1-11
	No: Claims	

**2. Citations and explanations**

**see separate sheet**

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/IB 02/01205

**Re Item I**

Basis of the opinion

I.1 The current set of claims was allowed into the procedure although:

- the word "cold" has been forgotten from the wording of independent claim 1. Indeed, the whole application as filed provides support for essential oil extracts obtained from cold desert plants. Since a correct amendment is mentioned on the marked-up copy filed at the same time, this is judged to be an involuntary mistake.
- the word "oxide" has been forgotten when defining the new chemo-type mentioned in independent claim 1, which must be of the citronellol - rose **oxide** type, as clear from the description on p.2 li.21-22.

These omissions introduce lack of clarity (Art. 6 PCT) and might also be considered to contradict Art. 34 (2) b PCT, and have to be corrected upon entry in national phases.

**Re Item V**

Reasoned statement under Art. 35 (2) PCT with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

V.1 Reference is made to the following documents:

D1: XP002221252

D2: XP002221255

D3: XP002221256

D4: XP002221253

D5: XP000221254

(same and in the same order as cited in the International Search Report)

**V.2 Novelty and inventive step**

V.2.1 It is first to be noted that the feature of independent claim 1 which relates to the yield of extraction ("yield of about 0.45% on fresh wt. basis") is obviously a feature of the process by which the product is obtained, and not a feature of the essential oil obtained. It is therefore not a distinguishing feature. Similarly, the feature of claim 2 does not help characterizing the claimed product.

V.2.2 It is clear from D1 that essential oils extracted from *Dracocephalum heterophyllum* Benth are known, as this document mentions that such an oil has been analyzed. Further, the essential oil mentioned in D1 contains 50% of citronellol, thus it must also be considered that that variety is also of the same chemotype as that of the

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/IB 02/01205

variety of the invention. Thus, the subject-matter of independent claim 1 only differs from the essential oil of D1 by the presence of slightly higher levels of citronellol, and possibly, differences in the other compounds. Since differences in the levels of the compounds of interest are anyway to be expected between varieties of the same plants, and in the regrettable absence of a clear characterization of the plant variety tested, the subject-matter of independent claim 1 (although new in the sense of Art. 33.2 PCT) is considered not to involve an inventive step in the sense of Art. 33.3 PCT.

The features of claims 2-4 can not be considered to be technical features which allow to characterize the essential oil itself (see also V.2.1). Thus, the subject-matter of claims 2-4 also does not involve an inventive step (Art. 33 (3) PCT).

The uses according to claim 5-7 is suggested by D1. This is apparently not the case for the uses according to claims 6 and 7, which are also not derivable from the other prior art documents. Thus, the subject-matter of these claims might be considered to involve an inventive step in the sense of Art. 33.3 PCT.

V.2.3 The process according to claim 8 appears to be a very usual steam extraction process. A man skilled in the art having knowledge of D1 or D4 would therefore use it without the exercise of inventive skills for the preparation of an essential oil of *Dracocephalum heterophyllum* Benth. Accordingly, the additional technical features of the other process claims 9-11 can not provide an inventive step in the sense of Art. 33 (3) PCT.

V.3 The subject-matter of all claims is industrially applicable in the sense of Art. 33 (4) PCT.

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6

PCT/IB 02/01205

**CLAIMS**

1. A novel essential oil mixture obtained from new chemo-type namely citronellol-rose oil type of natural and cultivated desert plant *Dracocephalum heterophyllum Benth.* having high value of perfumery compounds, yield of about 0.45% on fresh wt. basis, said essential oil mixture obtained from:
  - (i) a natural plant comprising:
 

cis-rose oxide 1.6%, trans-rose oxide 0.5%, citronellal 6.7%, citronellol 74.9%, geranial 1.5%, citronellyl acetate 6.7%, neryl acetate 0.7%, geranyl acetate 1.3%, spathulenol 1.5%, citronellyl-isobutyrate 0.8%, citronellol formate 0.2% and  $\alpha$ -bourbonerie 0.4%.
  - (ii) a cultivated plant comprising:
 

benzaldehyde 0.2%, 6-methylheptanone 0.2%,  $\alpha$ -pinene 0.5%,  $\beta$ -pinene 0.2%, linalol 0.8%, cis-rose oxide 0.6%, trans-rose oxide 0.3%, citronellal 2.5%, citronellol 54.3%, neral 1.2%, geranial 2.4%, geraniol 1.9%, citronellyl acetate 21.6%, neryl acetate 0.4%, geranyl acetate 11.7%,  $\beta$ -farnesene 0.1%,  $\delta$ -elemene 0.5%, spathulenol 0.2% and citronellyl-isobutyrate 0.3%.
2. The essential oil mixture according to claim 1, wherein the constituents of said essential oil mixture are identified by Gas Chromatography (GC) and Gas Chromatography Mass Spectra (GCMS).
3. The essential oil mixture according to claim 1, wherein the yields of citronellol and rose oxide thus obtained are substantially higher than from any other *Dracocephalum* species.
4. The essential oil mixture according to claim 1, wherein the chemotype containing highest content of citronellol and rose oxides is designated as 6th type of chemo-type and named as citronellol, rose oxide type.
5. Use of an essential oil mixture according to claim 1, wherein said oil mixture content is a new commercial source for obtaining citronellol.
6. Use of an essential oil mixture according to claim 1, wherein said oil mixture content is a new commercial source for obtaining cis and trans rose oxides.
7. Use of an essential oil mixture according to claim 1, wherein said oil mixture content is a new commercial source for obtaining citronellyl acetate, geranyl acetate and citronellyl iso-butyrate.
8. A process of extraction of essential oil mixture from a new plant source, *Dracocephalum heterophyllum Benth.*, said process comprising the steps of:

CLEAR VERSION (ART 34)

AMENDED SHEET

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7

PCT/IB 02/01205

- (a) charging plant material with water in a round bottom flask attached to Clevenger type apparatus;
  - (b) heating the plant material to a boiling temperature;
  - (c) condensing the vapor to separate the volatile oil mixture from the upper layer of distillate to obtain the essential oil mixture;
9. A process according to claim 8, wherein the essential oil mixture yield from *D. heterophyllum* is about 0.45% on fresh wt. basis.
10. A process according to claim 8, wherein the plant material is selected from the whole plant.
11. A process according to claim 8, wherein the plant material is used obtained both from high altitude natural plants and from low altitude cultivated plants.

CLEAR VERSION (ART 34)

AMENDED SHEET